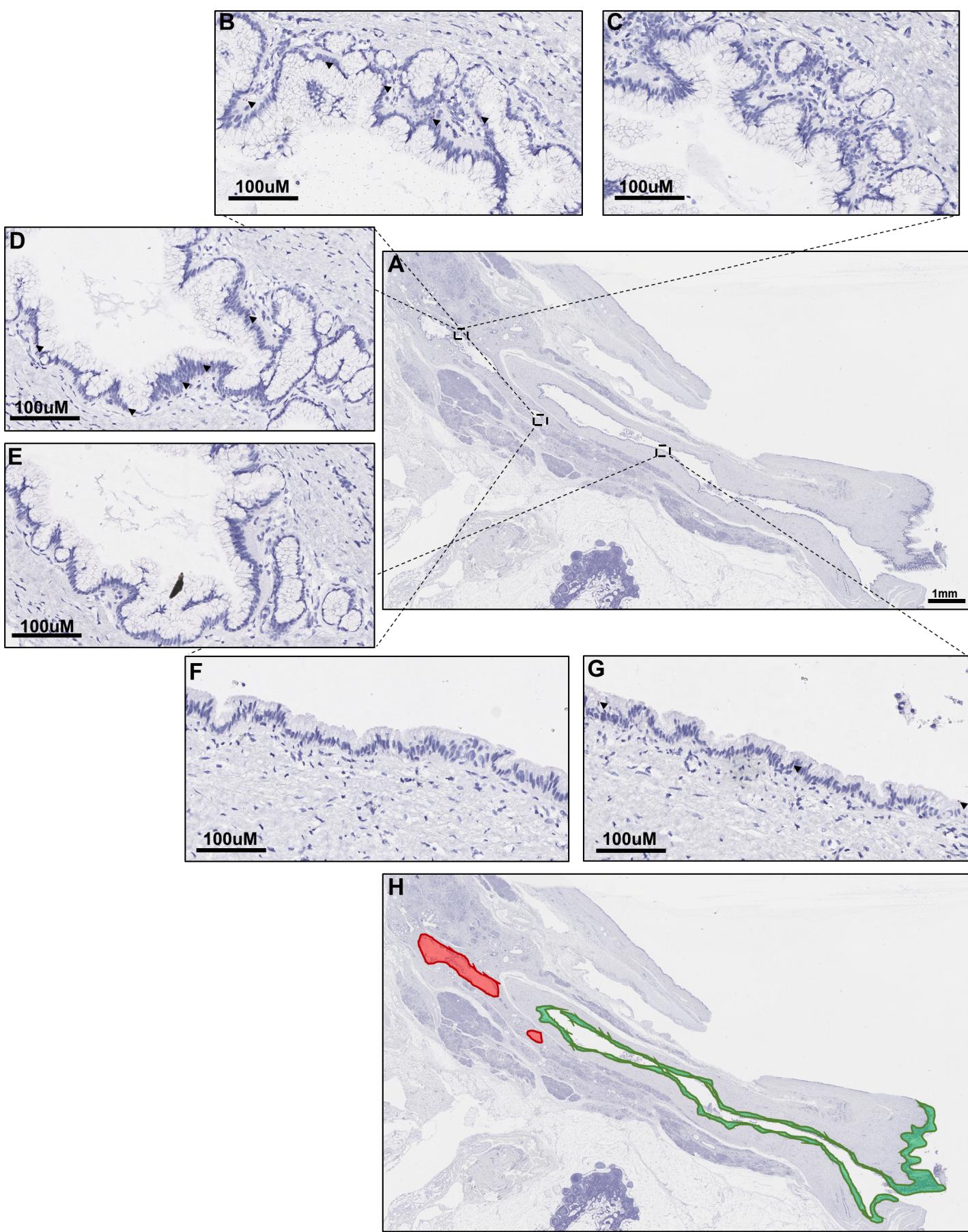


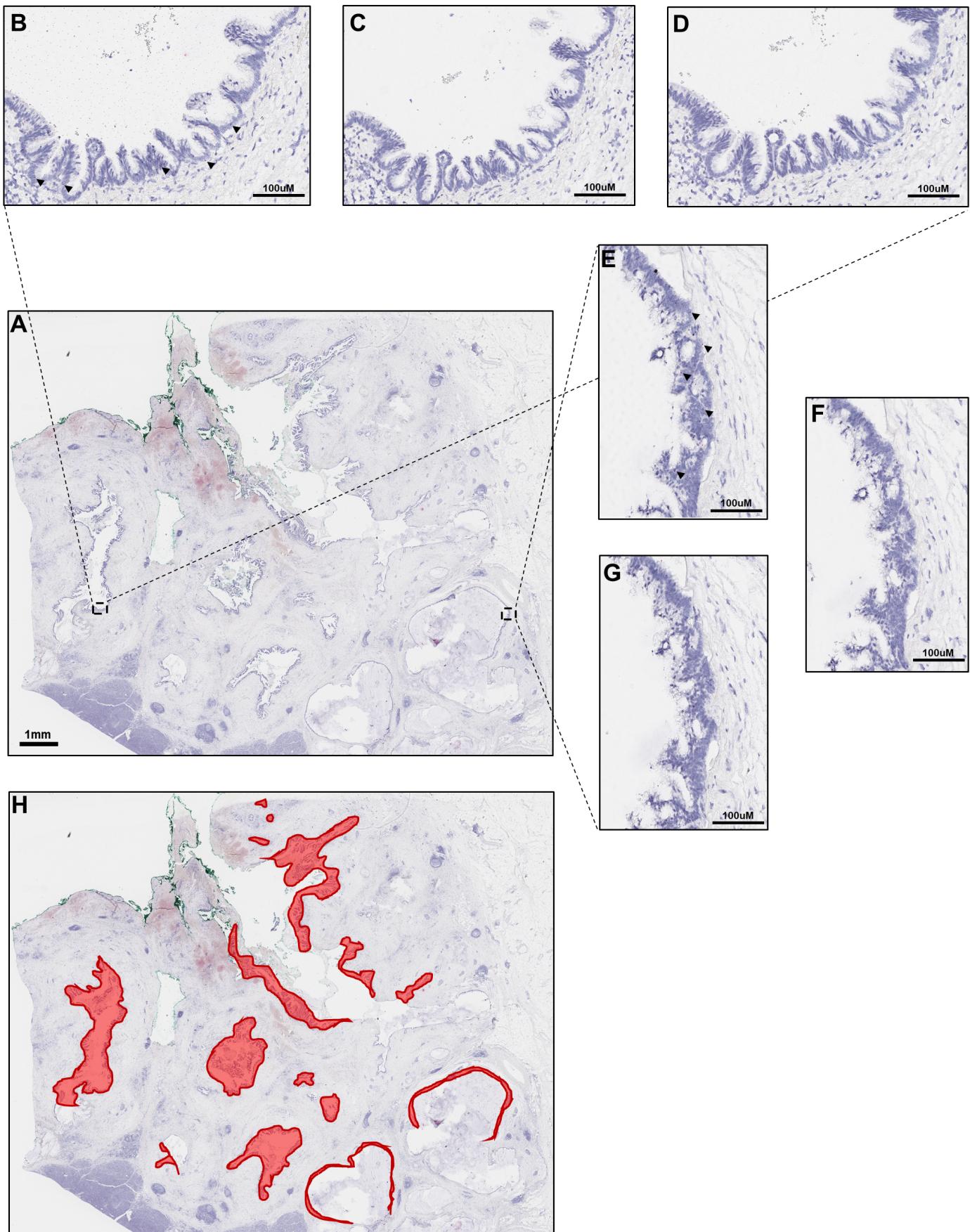
**Supplementary Figure S2. KRAS mutant probe validation.** **A-B.** KRAS p.G12D probe for cell pellet 0.5X magnification (**A**) or 15X magnification (**B**). **C-D.** KRAS p.G12R probe for cell pellet 0.5X magnification (**C**) or 15X magnification (**D**). **E-F.** KRAS p.G12V probe for cell pellet 0.5X magnification (**E**) or 15X magnification (**F**).



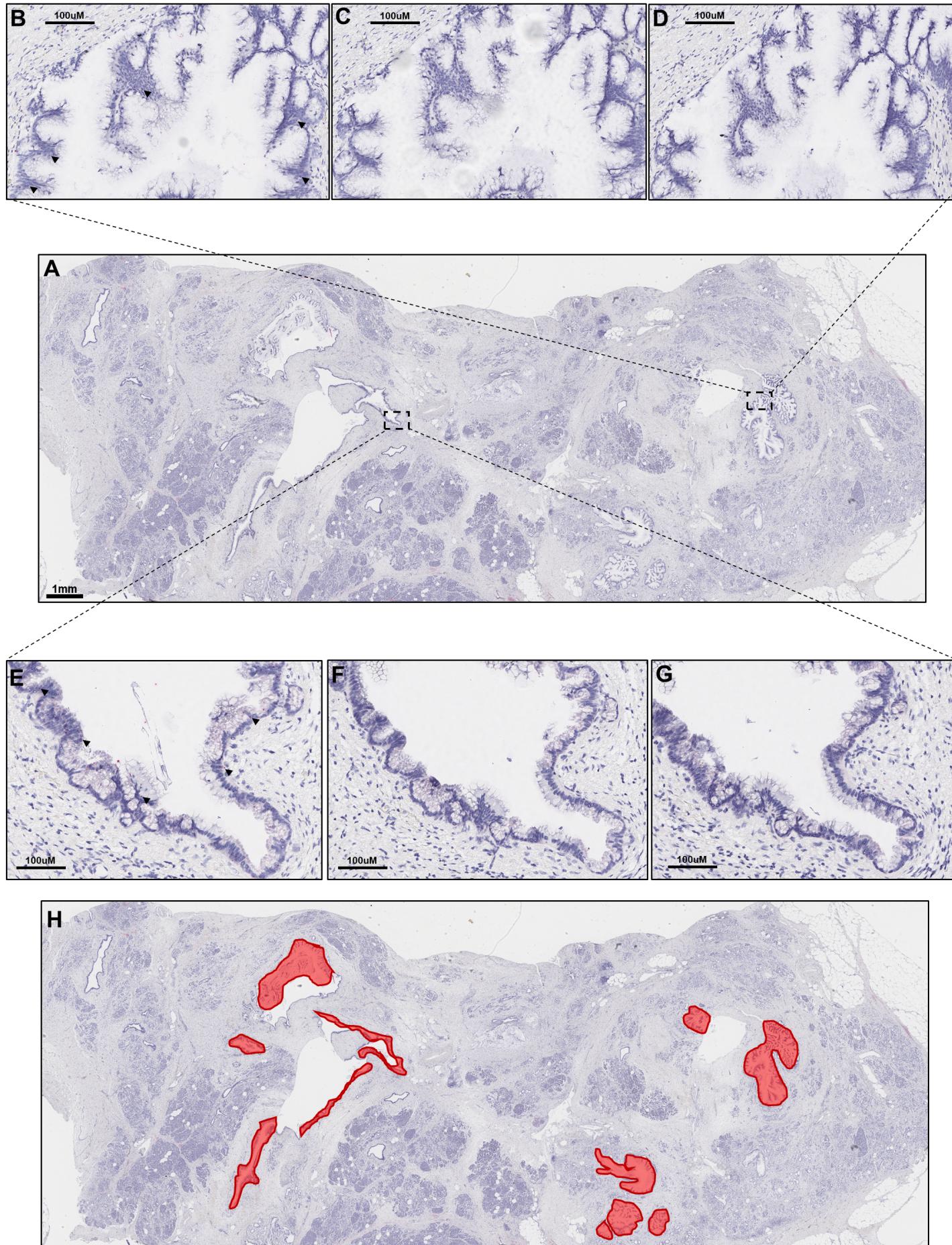
**Supplementary Figure S3. Basescope *in-situ* RNA detection of mutant KRAS in IPC08 T5.**

**A.** Hematoxylin stain of low-grade IPMN sample IPC08 T5. **B-C.** Representative image of Area 1 probed for either KRAS p.G12R (**B**) or KRAS p.G12V (**C**). **D-E.** Representative image of Area 2 probed for either KRAS p.G12R (**D**) or KRAS p.G12V (**E**). **F-G.** Representative image of Area 3 probed for either KRAS p.G12R (**F**) or KRAS p.G12V (**G**). **H.** Hematoxylin stain of IPC08 T5 overlaid with red, indicating areas of positive staining for KRAS p.G12R or green, indicating areas of positive staining for KRAS p.G12V. Dark red dots designate positive signal (black arrows point to representative cells with positive staining) Nuclei were counterstained with hematoxylin. **A** and **H** = Magnification 0.5X. **B-G** = Magnification 15X.

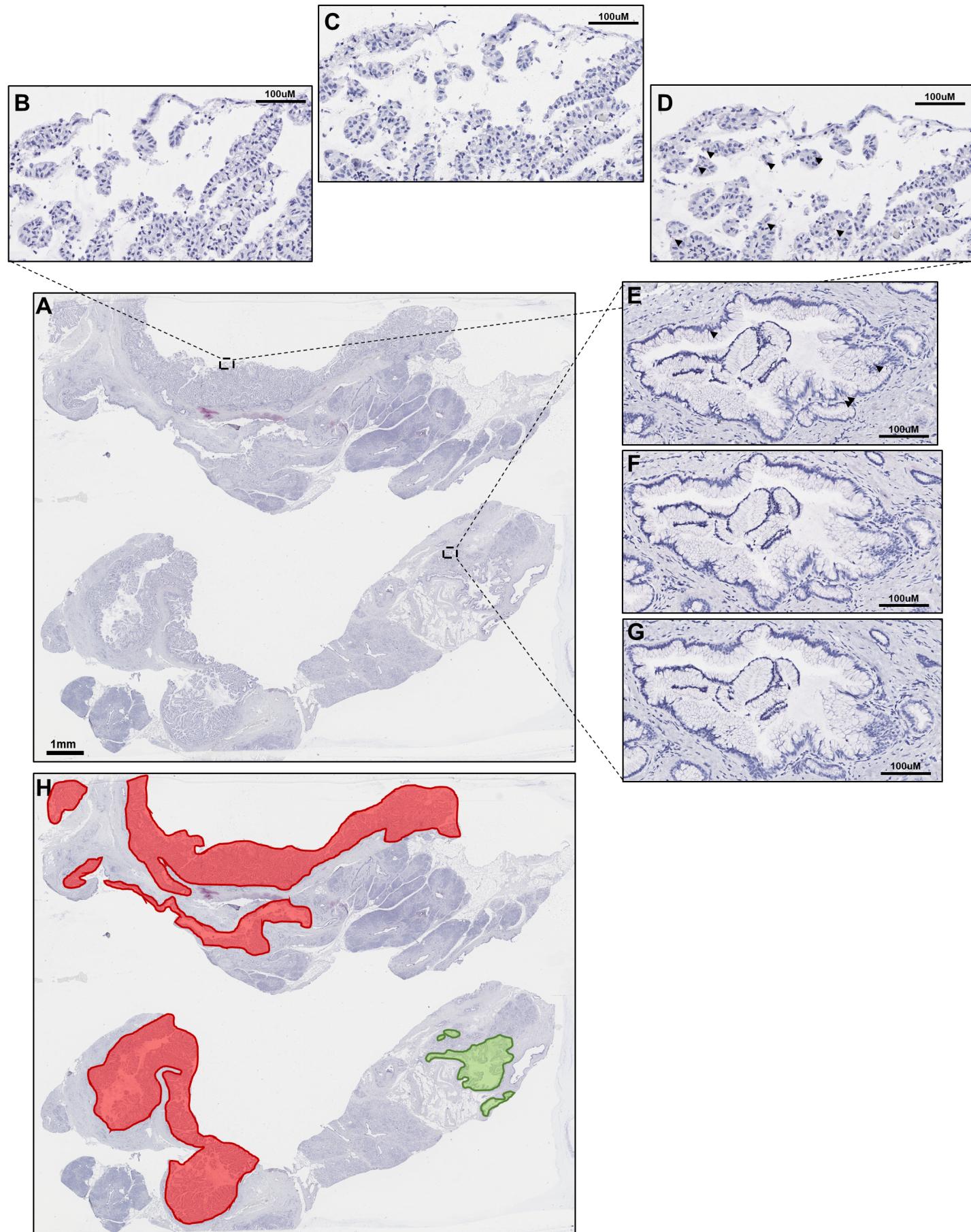
Note: KRAS p.G12D probe did not pass quality control for this case



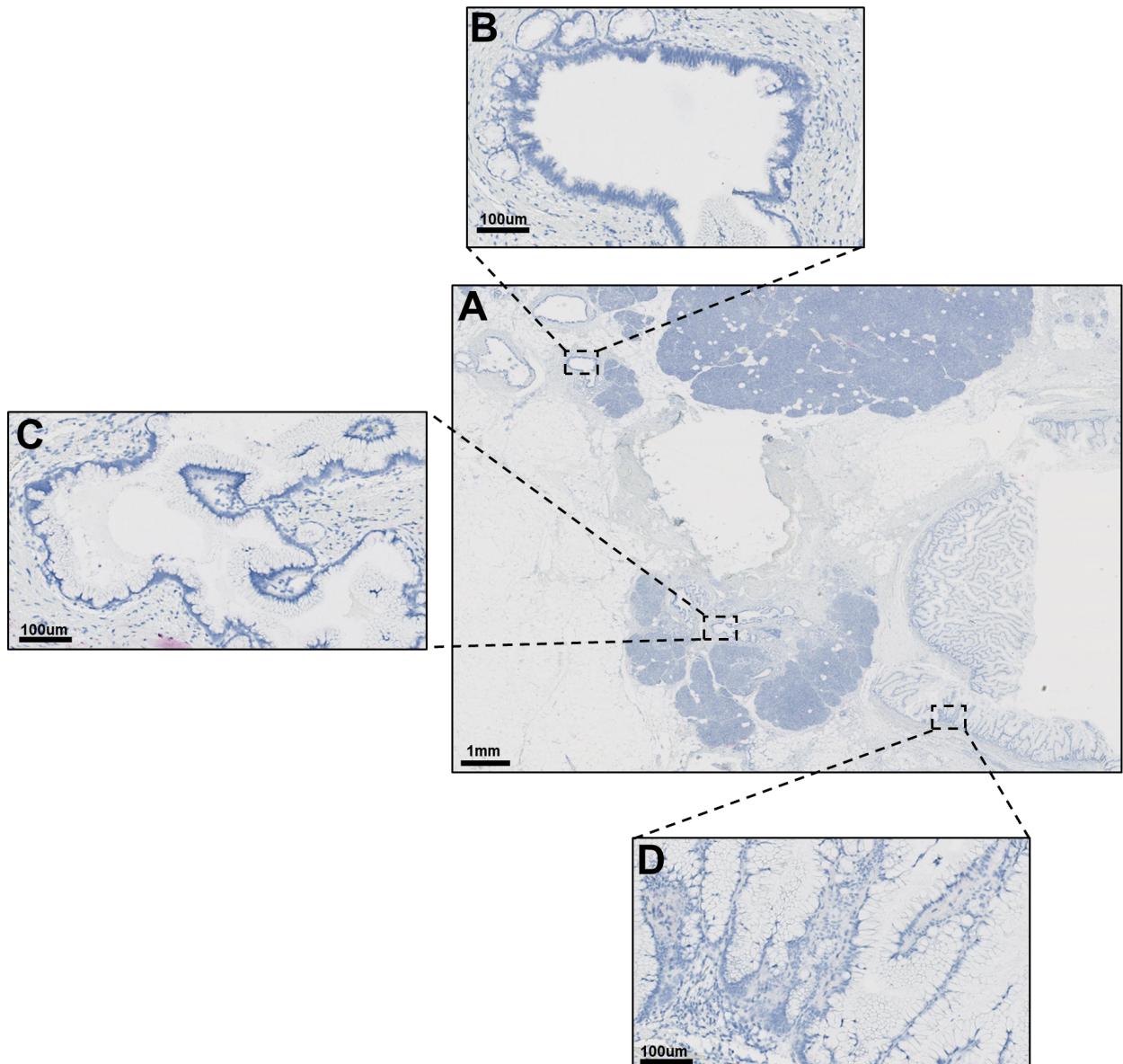
**Supplementary Figure S4. Basescope *in-situ* RNA detection of mutant KRAS in IPC13 T28.** **A.** Hematoxylin stain of high-grade IPMN sample IPC13 T5 with closely associated invasive PDAC. **B-D.** Representative image of Area 1 (high-grade) probed for either KRAS p.G12D (**B**) KRAS p.G12R (**C**) or KRAS p.G12V (**D**). **E-G.** Representative image of Area 2 (invasive PDAC) probed for either KRAS p.G12D (**E**) KRAS p.G12R (**F**) or KRAS p.G12V (**G**). **H.** Hematoxylin stain of IPC13 T28 overlaid with red, indicating areas of positive staining for KRAS p.G12D. Dark red dots designate positive signal (black arrows point to representative cells with positive staining) Nuclei were counterstained with hematoxylin. **A** and **H** = Magnification 0.5X. **B-G** = Magnification 15X.



**Supplementary Figure S5. Basescope *in-situ* RNA detection of mutant KRAS in IPC16 E.** **A.** Hematoxylin stain of high-grade IPMN sample IPC16 E. **B-D.** Representative image of Area 1 probed for either KRAS p.G12D (**B**) KRAS p.G12R (**C**) or KRAS p.G12V (**D**). **E-G.** Representative image of Area 2 probed for either KRAS p.G12D (**E**) KRAS p.G12R (**F**) or KRAS p.G12V (**G**). **H.** Hematoxylin stain of IPC16 E overlaid with red, indicating areas of positive staining for KRAS p.G12D. Dark red dots designate positive signal (black arrows point to representative cells with positive staining) Nuclei were counterstained with hematoxylin. **A** and **H** = Magnification 0.5X. **B-G** = Magnification 15X.



**Supplementary Figure S6. Basescope *in-situ* RNA detection of mutant KRAS in IPC18 T11.** **A.** Hematoxylin stain of high-grade IPMN sample IPC18 T11 with area of low-grade dysplasia. **B-D.** Representative image of Area 1 (high-grade) probed for either KRAS p.G12D (**B**) KRAS p.G12R (**C**) or KRAS p.G12V (**D**). **E-G.** Representative image of Area 2 (low-grade) probed for either KRAS p.G12D (**E**) KRAS p.G12R (**F**) or KRAS p.G12V (**G**). **H.** Hematoxylin stain of IPC18 T11 overlaid with green, indicating areas of positive staining for KRAS p.G12D or red, indicating areas of positive staining for KRAS p.G12V. Dark red dots designate positive signal (black arrows point to representative cells with positive staining) Nuclei were counterstained with hematoxylin. **A** and **H** = Magnification 0.5X. **B-G** = Magnification 15X.



**Supplementary Figure S7. BaseScope *in-situ* RNA detection of KRAS p.G12R in IPC09 B.** **A.** Hematoxylin stain of low-grade IPMN sample IPC09 B. **B.** Representative image of Area 1 probed for KRAS p.G12R. **C.** Representative image of Area 2 probed for KRAS p.G12R. **D.** Representative image of Area 3 probed for KRAS p.G12R. Nuclei were counterstained with hematoxylin. **A** = Magnification 0.5X. **B-D** = Magnification 15X.